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Author:

Buchanan & Layng corporation

Title:

An answer for the deficits of many branch lines

Place:

Baltimore

Date:

[192-?]

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Buchanan & Layng corporation.
An answer for the deficits of many branch lines [of railroads]. Baltimore, Buchanan & Layng corporation [192-]
cover-title, 17 l. incl. charts. 29 cm.

Multigraphed.

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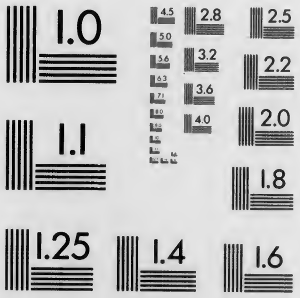

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Buchanan Laying corp.

An answer for the deficits
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AN ANSWER FOR THE DEFICITS OF MANY BRANCH LINES

BUCHANAN & LAYNG CORPORATION

825 EQUITABLE BLDG.
BALTIMORE, MD.

49 WALL STREET
NEW YORK

May 2, 1934 DA/HEC

TO THE RAILWAY EXECUTIVE:

What is to be done with Branch Lines if competition of motor trucks and busses continue? Will steam roads be permitted to withdraw entirely from handling mail and passenger traffic where it can be clearly shown the out-of-pocket costs are not earned? Must they continue as now on the principle of the strong aiding the weak or can a solution be found that will enable steam railways to render such superior service as to stop further encroachments?

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To say that a solution cannot be found is to slander the genius of the railway fraternity, but to recognize the enormity of the problem is to admit the truth. It is recognizing a knowledge of practical railroading combined with a technical knowledge of the functioning of electricity. If you have not seen them you will be interested in the following tables showing growth in manufacture and operation of motor driven vehicles, also the surprising concentration of one-half the country's tonnage.

Business
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THE TRAFFIC PROBLEM

A large number of Class 1 railways as well as short lines have lost a large part of the local traffic (so-called short haul) both passenger and freight to Buses and Truck lines.

But in few cases have these railways been able to cut operating expenses or reduce the number of local trains operated. The costs of upkeep of tracks, terminals, stations and overhead are practically fixed.

THE MOTOR DRIVEN VEHICLE

The extensive use of the automobile, the motor bus and the motor truck has caused serious inroads in the revenues of both the steam and electric transportation systems. It is all the more serious as this form of competition is the keenest on branch lines where the traffic is relatively light. These lines were a problem to the Managements even before the days of shifting costs and competition. The forms of taxation which are imposed on the railway companies and used to construct and maintain a good highway or road bed for his competitor seems also to be another of those unjust things that are the irony of fate.

The seriousness of the automobile, motor bus and motor truck competition should not be underestimated. The problem is serious today but ten years from now today's competition may seem as zero comparatively speaking.

Will the steam railways still give the superior service to any new method of transportation that may be developed or will the automotive interests develop superior units solely for use on public highways?

It would seem that to a certain extent the steam roads may profitably appropriate to themselves the good of this development that is suited to the purpose of rail conditions.

Today there are over thirteen million motor driven vihicles registered in the United States and at the present rate of increase it is reasonable to expect on a conservative basis that by 1930 this will reach the enormous total of twenty millions.

Of the total registered machines at present, approximately fifty thousand are motor buses and about one and one half millions are motor trucks.

Both buses and trucks are showing large annual increases.

In 1922 more than $742,000,000 was spent on highway road construction in the United States. Each year will probably see an increase in this figure.

The following graph and figures show the motor driven vehicles registered in the United States by years since 1910.

MOTOR DRIVEN VEHICLES REGISTERED IN THE UNITED STATES

YEAR	REGISTRATION
1895	300
1896	900
1897	2,100
1898	4,600
1899	8,624
1900	13,824
1901	20,590
1902	28,755
1903	38,083
1904	57,864
1905	77,888
1906	106,928
1907	142,061
1908	197,479
1909	311,197
1910	468,497
1911	639,514
1912	944,000
1913	1,287,000
1914	1,711,339
1915	2,445,664
1916	3,512,995
1917	5,104,321
1918	6,146,617
1919	7,530,105
1920	9,177,129
1921	10,464,005
1922	12,239,114

These figures are shown graphically on opposite page.

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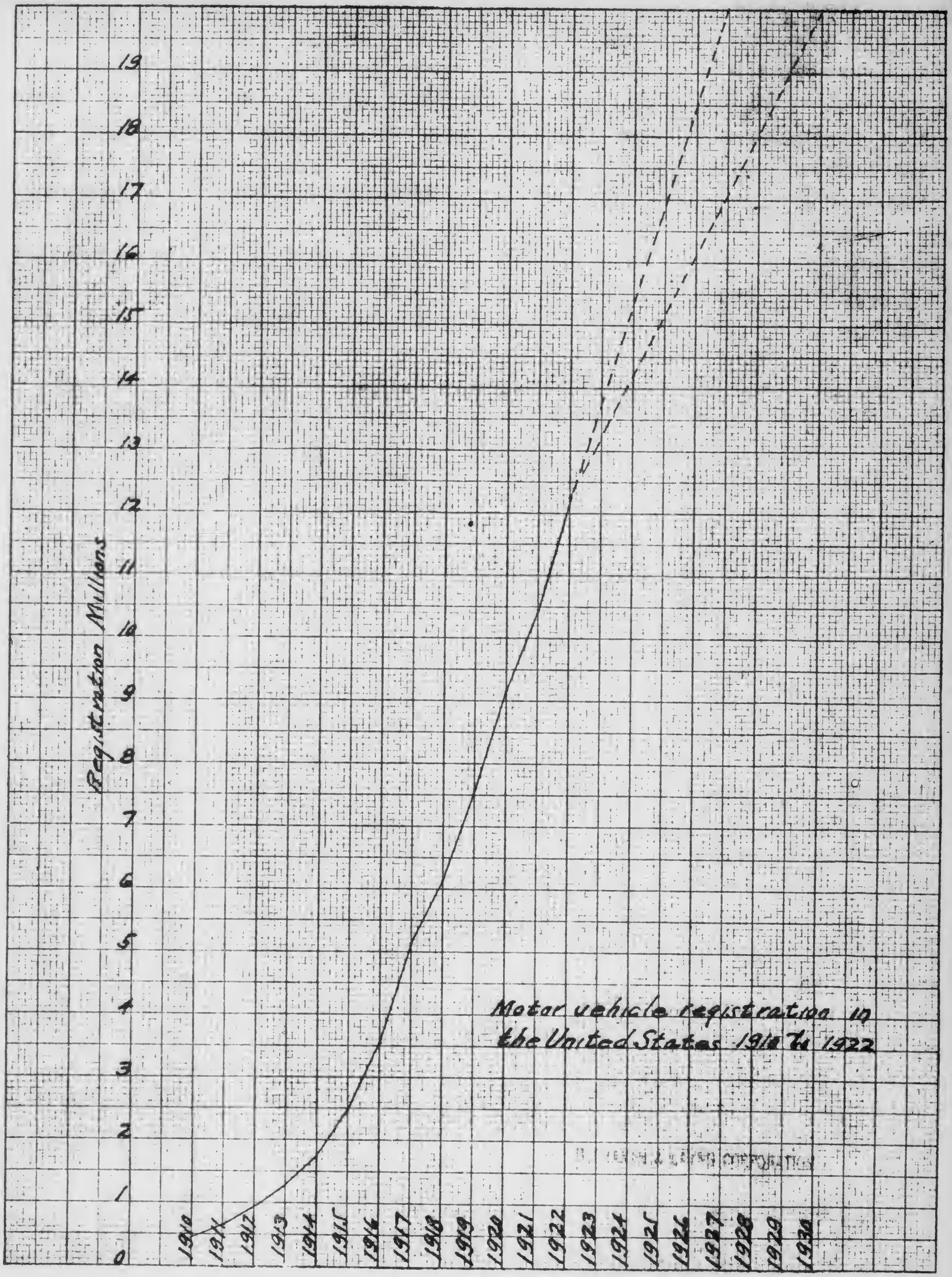

Motor vehicle registration in the United States 1910 to 1922

20 DIVISIONS PER INCH. NO. 318

The number of motor driven vehicles manufactured year by year since the inception of the industry directly show its remarkable growth. The wholesale value of automotive products for the year of 1922 was $2,558,207,389.

The production of motor driven vehicles yearly increase in registration and vehicles retired has been as follows:

YEAR	MANUFACTURED	YEARLY INCREASE IN REGISTRATION	RETIRED	% RETIRED TO MANUFACTURED
1910	187,000	157,300	29,700	15.9%
1911	210,000	171,017	38,983	18.5
1912	378,000	304,486	63,514	16.8
1913	485,000	343,000	142,000	29.3
1914	564,054	424,339	144,715	25.4
1915	892,618	734,325	158,293	17.75
1916	1,583,617	1,067,332	516,285	32.6
1917	1,868,949	1,591,325	277,624	14.8
1918	1,153,638	1,042,296	111,342	9.6
1919	1,974,016	1,383,488	590,528	30.
1920	2,205,197	1,647.024	558,163	25.3
1921	1,661,550	1,286,876	374,674	22.5
1922	2,659,064	1,775,109	883,855	32.8

These figures are shown graphically on the opposite page.

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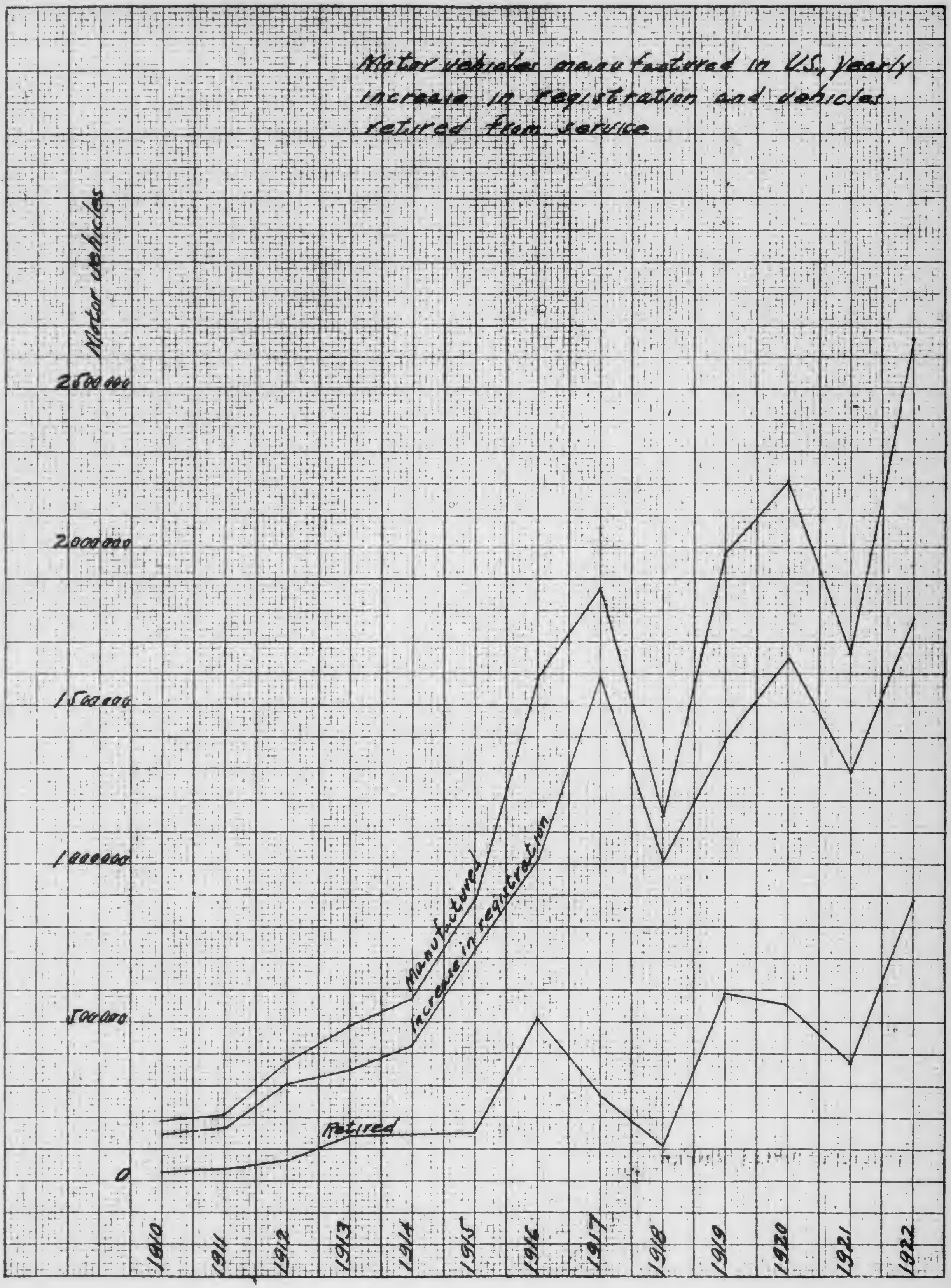

Motor vehicles manufactured in U.S., yearly increase in registration and vehicles retired from service

DIVISION OF TRAFFIC

There is in excess of 250,000 route miles of steam railway in the United States.

Mr. L. F. Loree has stated in his treatise "Railroad Freight Transportation" that "The railroads of the country embrace more than 253708 miles. It seems probable that 28,708 miles should be abandoned as no longer economically justified. Half the traffic is concentrated on about 25,000 miles of railroad, or less than 10 per cent of the whole. The companies operating the remainder have to get along as best they can on such profits as may be derived from handling the other half of the traffic". This means that by present methods of operation the investment in these properties is not only lost but is a drain on the net of the more favored lines that are called upon to support them.

The approximate total revenues of the steam roads of the United States as given by the Interstate Commerce reports has been as follows:

YEAR	APPROX. OPERATING REVENUES
1908	$2,440,638,832
1909	2,473,205,301
1910	2,812,141,575
1911	2,852,854,721
1912	2,906,415,869
1913	3,208,647,370
1914	2,956,193,202
1916	3,472,641,941

YEAR	APPROX. OPERATING REVENUES
1917	$4,115,413,057
1918	4,880,202,255
1919	5,144,466,361
1920	6,178,120,978
1921	5,516,556,455

Assuming the annual gross revenue of the steam roads to be $6,000,000,000 and if half this business is on 10% of the miles of route or 25,000 miles, the average gross revenue per mile is $120,000 and the other half of the gross is accrued from 90% of the miles of route averaging $13,000 a mile. This $13,000 is an average figure, therefore many branch lines have a scanty income and produce a serious economic problem.

Assuming that the ratio of this division of traffic was the same for some years, it follows that the problem of all lines other than the favored 25,000 miles of route has always been serious.

Based on this estimate the average revenues on the 25,000 miles and the average on the remainder of the systems were as follows:

YEAR	AV.REVENUE PER MILE ON THE 25,000 MILES	AV.REVENUE PER MILE ON THE REMAINDER
1908	$48,812	$5,938
1909	49,464	5,876
1910	56,243	6,514
1911	57,057	6,447
1912	58,128	6,467
1913	64,173	7,022
1914	62,530	6,751
1915	59,124	6,312
1916	69,452	7,413
1917	82,308	8,767
1918	97,604	10,449
1919	102,889	11,014
1920	123,562	13,105
1921	110,331	11,773

These figures on a route mile basis are shown graphically on the opposite page.

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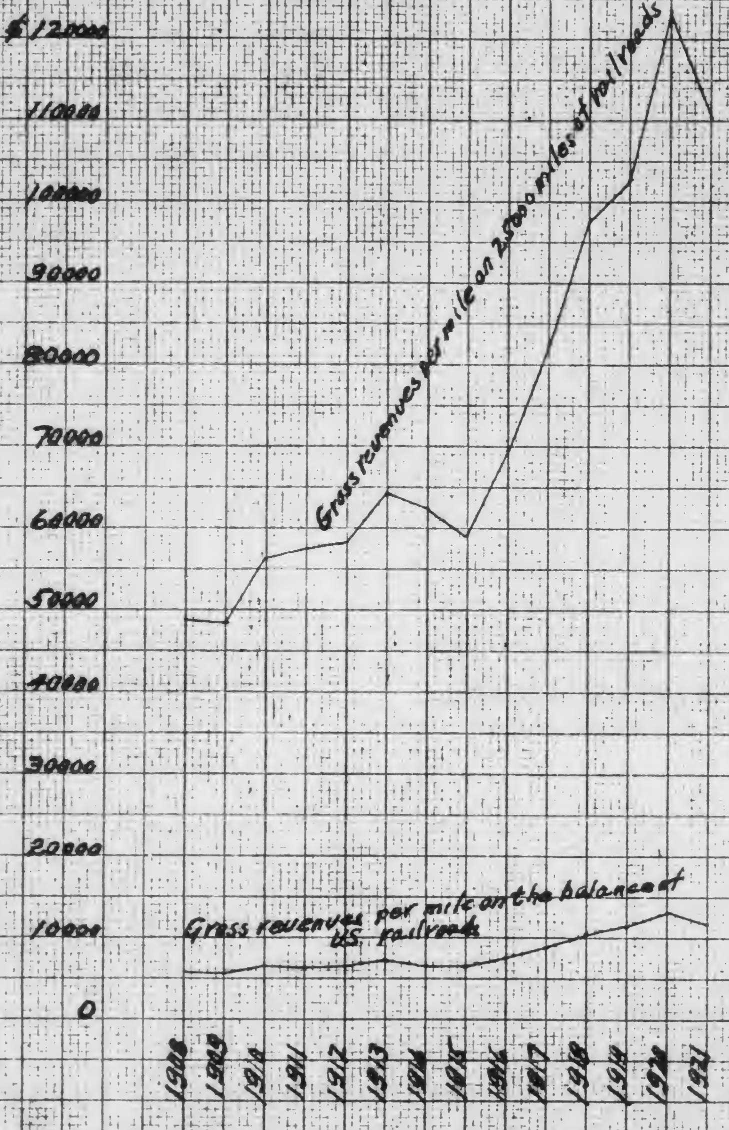

A careful study and investigation will show a big return on the investment by electrification of some of the denser traffic lines and a number of the branch lines and suburban services on main lines can be made profitable, by changing operating methods and equipment.

The steam roads as a rule have better operating facilities than interurban lines, and if electrified, can make faster schedules at lower cost.

The electric lines when built accepted gradients and curvatures that the steam roads could not consider.

MOTIVE POWER.

There are a number of new methods of applying motive power that in many cases seem to the railway operator to have certain merit. But the real question with him is how near these new types of equipment come to meeting the actual service conditions of the railways.

From what is known of the industry at present the problem put briefly, is as follows:

1st: Continue steam operation on all divisions, making use of new types of steam engines, automatic stokers and all such modern devices that may be invented to make steam motive power more efficient.

2nd: Determine by comparative results with steam operation and all other forms of available motive power using present operating costs as the basis of comparison. Some of the features to consider are as follows:

A. Gas, gas electric, or Diesel electric cars to be considered where no other form or motive power is justified. Frequent service that is possible to give at a relatively low cost is a business builder. In many cases it will create traffic and in many others it will regain traffic lost to automobiles and buses.

B. Electrification of terminals.

C. Electrification of heavy grade service.

D. Electrification of main line service to relieve traffic congestion and to delay the building of parallel tracking.

E. Electrification of yards.

F. Multiple unit electric cars for suburban service.

G. Light electric cars running single and two car trains for light branch service, substituting this service for three and five car steam trains where one and two trains per day are operated. Consider giving hourly service where one or two steam trains are now operated. Consideration be given to operating steam freight trains.

H. Investigate over-night movement and delivery of packages and express by truck from stations to compete with truck lines on short haul traffic.

The immediate pressing problem is to secure a unit which will give the class of passenger service necessary on all lines producing comparatively low revenue per mile.

The large investment for electrification will naturally retard development along this line but with the gas driven cars the capital expenditures are made on a small unit basis. This class of car makes it possible to give the necessary frequency of service at a cost that will not only regain lost business in many cases but ~~to~~ will also promote the growth of communities.

The gas, gas electric and Diesel engine driven units are now in course of development and it is reasonable to expect a satisfactory unit will shortly be produced.

As a rule it is the practice to make plans for electrification so as to take in any possible function that can be performed electrically. This naturally makes the estimated cost much larger than a proposition to merely put wires over main line tracks and such sidings and portions of yards that are absolutely essential in the actual handling of trains. Such switching that is required in the yards can still be steam operated until such time as the economics of the situation dictates electrification.

ANALYSIS

1st: Separate operating expenses and operating revenues by divisions and lines. Where actual figures are not obtainable make estimates. This is to determine the form of motive power best suited to meet conditions and have the minimum operating cost.

2nd: Compile statement of tonnage handled to prepare traffic density map.

3rd: Review in a general way traffic conditions and make recommendations.

4th: Report on capital expenditures required for any change of motive power or equipment that is to be recommended.

5th: Report on savings in operation of any new method proposed.

6th: Report on improvements in the service as the result of the investigation and the changes recommended.

On account of the importance and wide scope of this analysis work it is suggested that any company that contemplates undertaking an investigation of this character that the analyst should work out of the executive offices.

The nature of the work makes it advisable to work up all figures with the department heads involved. Their years of experience and judgment will not only cut down the time and cost of the investigation but also will greatly enhance its value to the operating company.

Manifestly it is not a task to impose upon the regular Staff for they have not the time, and in many instances would not risk the opposition sure to be encountered from certain interests.

The Brotherhoods probably will at first oppose changes in operation, but the new method of operation will build up an increasing business that will require more units to perform the service and will consequently require more men rather than less men. When it is demonstrated that this service creates increased traffic then the opposition will be overcome.

The Staff of the Buchanan & Layng Corporation happily combines the attributes necessary for a comprehensive study and adaptation of principles of special operation, especially in the electric field.

Associated with the organization are experienced Engineers in designing and construction of power plants, substations and transmission systems.

Mr.C.B.Buchanan, the President, has been engaged in making financial reports and surveys, and operated and managed 250 miles of electric railways and electric plants in Cities in Virginia, and is thoroughly posted as to the best practices in electric operation.

Mr. John F. Layng, the Vice President, as a consulting engineer has made surveys, traffic and operating reports for a number of railways and served both the Westinghouse Company and the General Electric Company as railway and traction Engineer. This service required him to work in some capacity on practically every large electrification in the country - a few of them as follows, viz:

Long Island Railroad
Grand Trunk Railroad
New York Central R.R.
New York, New Haven & Hartford R.R.
West Jersey & Sea Shore R.R.
Chicago, Milwaukee & St. Paul R.R.
Manhattan Elevated Ry.
New York Subways.
Brooklyn Elevated Railway
Chicago Elevated Railway.

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